CG

Restricted Circulation

This paper is not an official document; it is for information only and reference cannot be made to it in any printed publication without the permission of the author.

Agricultural Memorandum No 588a

Evaporation losses in a year of fallow - L P Smith

In Ag. Mem. 588, constants were omitted from the regression equations. These should be

$$\text{Formula (a)} \quad \frac{E}{PE} = 0.01W + 0.07\frac{R}{PE} + 0.11$$

$$\text{(b)} \quad \frac{E}{PE} = 0.01W + 0.15\frac{R'}{PE} + 0.075$$

These equations, found using Cranwell data, were tested on the same 10 years for Goole, giving mean errors of 14-15 mm.

The 20 sets of data were combined and new parameters tested.

W_{AS} = Rain days (3 mm. or more) April and September
W_{MA} = " " " May to August

W' = Rain days (3-15mm) April to September plus half rain days over 15mm in same period.

giving equations

$$\text{(c)} \quad \frac{E}{PE} = 0.0052W_{AS} + 0.0062W_{MA} + 0.34\frac{R'}{PE} + 0.104$$

$$\text{(d)} \quad \frac{E}{PE} = 0.39\frac{R'}{PE} + 0.0055W' + 0.097$$

Each of these equations gave multiple regressions of 0.95 and mean errors of 10-11mm.

Details are given in the Appendix.

Appendix

		PE	R'	W_{AS}	W_{MA}	W'	E	Estimated E (c)	Estimated E (d)
Cranwell	1959	607	166	6	12	16.5	169	183	178
	1960	547	283	9	23	30	244	257	254
	1961	534	267	14	18	31.5	235	245	248
	1962	515	270	14	13	25.5	223	224	227
	1963	530	298	10	19	26.5	246	246	244
	1964	533	217	7	20	27	226	215	216
	1965	517	291	14	24	36.5	292	267	267
	1966	553	353	9	25	32.5	297	289	290
	1967	566	328	10	21	28.5	264	273	272
	1968	527	400	17	22	35.5	293	315	310
Goole	1959	594	143	9	10	19	164	175	175
	1960	524	277	11	25	35.5	255	260	261
	1961	514	311	14	28	42	291	285	289
	1962	475	278	7	16	20.5	217	209	209
	1963	507	317	11	23	33	260	261	258
	1964	538	240	11	22	32.5	254	242	243
	1965	467	337	16	23	36	297	269	269
	1966	505	387	11	34	42.5	367	320	319
	1967	535	322	11	27	36	286	285	283
	1968	501	400	18	30	44	305	329	326

Note: There is a high regression (0.90) between E and R' with an equation

$$E = 0.55R' + 93.8$$

The mean error is 15mm and maximum 38mm

The simplest approximation would be

$$E = \tfrac{1}{2}R' + 109$$

Any comments or suggestions on this paper should be referred to the author.

Meteorological Office
Bracknell

JANUARY 1974